

Forsythe II Project

September 2015

The Boulder Ranger District (BRD) of the Arapaho and Roosevelt National Forests is proposing vegetation treatments on 3,840 acres of National Forest System (NFS) lands within the Forsythe II project area. The purpose of this project is to:

- Restore mixed conifer stands toward more characteristic composition, structure, and spatial patterns in order to increase resistance and resiliency to future natural disturbances
- Increase the size and vigor of aspen stands
- Maintain and increase meadow habitat
- Improve wildlife habitat to benefit species within the project area
- Reduce the effects of a wildfire to limit erosion from contaminating municipal water sources
- Decrease risk of crown fire within the project area, particularly adjacent to private property

The proposed action includes 3,170 acres of mechanical/hand treatment and 970 acres of broadcast burning. Both mechanical/hand treatment and broadcast burning would occur on 300 acres.

Project Location

The Forsythe II project area is located east of Nederland, CO and west of Gross Reservoir. The Forsythe II Project boundary has expanded an additional 800 acres from the 2012 Forsythe Project area. The project boundary now includes the area near the Kelly Dahl Campground to allow for treatment analysis east of the campground. The entire project area encompasses 18,954 acres; 9,930 of those acres are NFS lands, 2,187 acres are Boulder County Open Space lands, and 6,837 acres are private lands.

About the Project

In general, there are four vegetation stand conditions that are dominant across the project area. These dominant stand conditions are mixed conifer stands, lodgepole pine stands, aspen stands, and meadows/brush fields. The proposed units (see project map) were delineated based on these dominant stand conditions. A unit might be delineated as a mixed conifer stand but contain aggregations (1/2 acre to 5 acres in size) of the other dominant stand conditions. These aggregations would be expected to occur across 30% of any given unit and in more than 50% of the proposed units. For example, in a unit designated as mixed conifer there may be areas within the unit that have aspen clones, meadows, or patches of lodgepole pine. In situations where aggregations occur across a unit, the appropriate treatment would be implemented as described below.

To achieve the goals of a resilient forest, proposed activities would maintain stand densities at levels appropriate for the site (Reineke 1933; Long and Shaw 2005). Topography, slope, aspect and elevation would be factored into each treatment (North et al 2009). Project design would incorporate important features including riparian areas and corridors, openings, aspen stands, and open and closed forests (Addington et al. Draft). Sustainable patches of mixed conifer species would be represented on north and west aspects. Reforestation treatments (tree planting of mixed conifer species) would occur in patchcuts and clearcuts of previously lodgepole pine dominated stands to promote a diverse forest in the face of a changing climate (Kaufmann et al. 2012). Forested stands with high stand structural diversity would

correspond to a greater and richer flora and fauna in all vegetation types across the landscape (O'Hara, 2014).

Management actions that promote the objectives described below, and result in a more diverse landscape, would lessen impacts of future disturbances such as wildfire within the watershed.

Mixed Conifer Stands (1425 mapped acres)

Historically, ponderosa pine and mixed conifer stands were characterized by a mosaic pattern of individual trees, clumps of trees with a diverse understory and openings across the landscape. Mixed severity fires, both human and natural caused, created this historic mosaic pattern where clumps or groups of trees were left unburned, understory trees were thinned, and openings were created. Mixed conifer stands in higher elevations were characterized by much lower fire frequency and patches of stand-replacing fire in addition to low-severity surface fires (Evans, Everett, Stephens, and Youtz, 2011). Within the project area, ponderosa pine and mixed conifer stands have departed from historic fire regimes (a pattern of fire occurrences, frequency, size, severity, and fire effects in a given ecosystem) in the era of fire suppression. Generally, mean forest cover rose from 57% prior to settlement to 83% currently, and the current condition of any one location (along the Front Range) is 3.7 times more likely to be forested now than prior to settlement (Dickinson 2014). Because fire has been excluded for decades, many ponderosa pine and mixed conifer forest stands now have interlocking crowns with few canopy openings, become overgrown with understory vegetation, and overall are homogenous rather than multi-age. As a result, these stands are more susceptible to insect and disease epidemics and uncharacteristically intense fire.

Mixed conifer stands include a species mix of ponderosa pine, Douglas-fir, limber pine, lodgepole pine, and aspen. Unit prescriptions in mixed conifer stands would be designed to mimic historic fire regimes and achieve desired spatial patterns representative of the vegetation type. Treatment prescriptions would utilize a variation of the individuals, clumps, and openings (ICO) approach and variable density thinning to restore the spatial pattern (Churchill, Dalhgreen, Larson, and Franklin, 2013). This approach would create clumps of trees (groups of conifers with interlocking crowns), individual trees, and openings between residual trees to address visual, ecological, or social concerns. The units would be thinned to reduce the stand density by no more than 50% in any given unit from the existing volume or basal area while incorporating the spatial arrangement mentioned above. Scientifically, there is a broad consensus that to increase resilience treatments should seek to restore the range of patterns found in forests with intact disturbance regimes (Churchill et al. 2014, Covington et al. 1997, Allen et al. 2002, North et al. 2009, Stephens et al. 2010, Franklin and Johnson 2012).

Density reduction is a key objective of restoration treatments for Front Range ponderosa pine and dry mixed-conifer forests; however, not all stands should have the same target density (Addington et al. Draft). Implementation of a 50% volume reduction across a unit would allow for changes in units with various stand densities and different aspects. For example, a unit may have both north and south aspects within the boundary. The basal area on the north slope may have 200 sq. ft./ac. and the south aspect 80 sq. ft./ac. The north aspect would be cut down to 100 sq. ft./ac. and the south aspect would be cut down to 40 sq. ft./ac. The entire unit would be thinned meeting the fuel reduction objectives and continue to move the stand towards the desired future condition.

Clumps would be achieved by thinning through all ages and size classes, generally retaining the largest and healthiest trees. Each clump would contain a group of 2 to 12 trees while maintaining a variety of spacing between other clumps or individual trees in order to accomplish the target volume reduction. Spacing between clumps and individual trees would range between 15 to 50 feet while maintaining the overall total basal reduction. Openings may be enhanced and expanded near meadow or aspen dominated

areas. Areas where openings are created would generally remove tree age classes that are abundant across the project area. Thinning between the groups and openings would occur to create individual trees that would represent different ages and size classes.

This type of forest management or restoration would mimic mixed fire severity and create diversity in the vegetation across the landscape that was representative prior to fire suppression and settlement in the area and favor species for the future in a world of changing climate. These treatments are considered beneficial under a dynamic and changing climate as they enhance diversity (Gillette et al. 2014).

Lodgepole Pine Stands (1496 mapped acres)

Lodgepole pine stands, on the other hand, have not departed from the historical fire regime. These stands are characterized by closed canopies, long fire return intervals (100+ years), and stand replacing fires that burn with high intensity and severity. Because these stands are homogenous in nature, they become susceptible to insect and disease under drought conditions. Therefore, a purpose of this project is to create a diversity of age structures between lodgepole pine stands to promote resiliency in the face of future insect and disease epidemics.

There would be three possible treatments in lodgepole pine dominated stands, depending on the existing condition of the stands.

- **Patchcut/Clearcut** – In areas where lodgepole pine stands are continuous and single aged, patchcuts 1-5 acres in size or clearcuts 5-20 acres in size would be prescribed where all conifers within those cuts would be removed. Overall forest resilience to multiple disturbances can be increased when younger trees are a substantial component of the landscape (Taylor et al. 2006). In units where patchcuts or clearcuts are prescribed, no more than 80% of the unit would be cut. Untreated buffers of at least 100 feet would be left between patchcuts or clearcuts for habitat diversity. If aspen is used as an edge to a patchcut or clearcut, conifers may be removed within the clone to promote the aspen clone. Mixed conifer species may be retained in patchcuts or clearcuts if there is minimal potential for blowdown when the remainder of the stand is cut.
- **Regeneration Cut** – In units where lodgepole pine was cut previously (primarily patchcuts), lodgepole pine regeneration less than 15 feet tall would be thinned to an average spacing of 10-15 feet.
- **Sanitation Cut** – In units where lodgepole pine was previously thinned, additional thinning would occur. The extent of thinning that occurs in any one stand would be dependent on the health of the overstory trees. Where overstory trees are healthy (less than 30% of the stand is infected with dwarf mistletoe and an average Hawksworth rating of 3 or less), the stand would be thinned up to 30% of the existing volume or basal area. The smaller understory trees would be thinned to an average spacing of 10-15 feet. If, however, these smaller trees are functioning as a ladder fuel, they would be removed from underneath the overstory trees. In areas where the overstory trees are unhealthy (over 30% of the stand is infected with dwarf mistletoe and an average Hawksworth rating of 3 or greater), the overstory would be removed and the understory trees thinned to an average spacing of 10-15 feet.

Aspen Stands (196 mapped acres)

As a result of fire exclusion, aspen stands within the project area, for the most part, have been invaded by conifers. Over time, conifers often become established and decrease the available light, moisture, and nutrients for the aspen. As the stand grows, and shade on the site increases, conifer species eventually replace the aspen. Reducing shading and competition created by conifer encroachment provides the opportunity for improved growing conditions and slows the natural successional pattern allowing for a

longer retention of aspen on the landscape. Colorado's aspen forests provide essential wildlife habitat, are second only to riparian areas in terms of biodiversity richness, and provide a natural fire break. While aspen's thin, living bark makes it prone to a host of insect pests and diseases, the primary threats to Colorado's aspen forests are chronic browsing (e.g. by elk and cattle) of young aspen shoots and more recently a wave of aspen die-off (referred to as 'sudden aspen decline') due to long-term drought. Aspen stands are generally areas of greater moisture that can reduce the intensity of wildfires.

Aspen stands tend to have high biodiversity values and provide an important source of forage for many wildlife species. Younger aspen stands are often under-represented due to fire exclusion and encroachment of more shade tolerant conifers (Addington et al Draft). Aspen stands are described as areas where aspen stems greater than two inches in diameter exceed the number of conifers in the stand. There are two different prescriptions that would occur in aspen dominated stands depending on the existing condition.

- In aspen stands where encroaching conifers are generally less than 7 inches in diameter, aspen would be enhanced by removing all conifers within the aspen clone as well as within 50 feet of the perimeter of the clone, up to 16 inches in diameter at breast height (DBH). This treatment would be done manually.
- In aspen stands where encroaching conifers are generally greater than 7 inches in diameter, aspen would be enhanced by removing all conifers from within the aspen clone as well as within 50 feet of the perimeter of the clone, up to 16 inches DBH. This treatment would be done mechanically.

Meadows and Brush Fields (54 mapped acres)

Meadows and brush patches can occur as small habitats within surrounding forested stands or as large meadow, brush field, and grassland habitats. Meadows and brush fields are important habitat for a variety of wildlife species, add to the biodiversity of the project area, and provide a natural fire break. Conifer encroachment into mountain meadows and brush fields are common in the western United States mainly because of fire suppression. Historically, meadow habitat and brush fields were maintained by natural fire. Over time, conifer encroachment can reduce meadow, brush field, and grassland habitats as well as the habitat diversity they provide. Meadows generally present areas of lower fire hazards due to the lack of canopy fuels. Areas of lower intensity can allow wildfire suppression efforts to be more safe and effective.

In order to maintain grassland/meadow and brush field areas, all conifers, except ponderosa pine greater than 16 inches DBH, encroaching into grassland/meadow or brush field areas would be cut. In some areas, such as units in steep or rocky terrain and within meadow and brush field enhancement areas, treatment would be limited to hand crews only.

Private Home Defensible Space

Property owners in cooperation with the Colorado State Forest Service and Boulder County are continuing to create areas of defensible space around homes and other improvements on private lands. In order to comply with home insurance companies, some private landowners have been required to complete defensible space mitigation around their homes. Defensible space is the area around a home or other structure that has been modified to reduce fire hazard. In this area, natural and manmade fuels are treated, cleared or reduced to slow the spread of wildfire. Creating an effective defensible space involves a series of management zones in which different treatment techniques are used.

Some of these private homes are in close proximity or adjacent to the Forest Service. For vegetation treatments to be most effective for these private property owners, the treatments need to be applied in a

manner and location that complements existing defensible space efforts on private land. Another purpose of this project is to provide homeowners the ability to complete the required defensible space across their property boundaries onto National Forest System lands.

Treatment units within 300 feet of private structures would include fuel reduction objectives to decrease wildfire hazard directly adjacent to those structures. In areas outside of proposed units where there are private structures located within 300 feet of the Forest Service boundary, within the project boundary, private property owners would be permitted to complete defensible space treatments on Forest Service lands. Treatment would follow the guidelines outlined by US Forest Service specialists and in the Defensible Space Management Zones as described by the Colorado State Forest Service (CSFS 2012). There are three zones that characterize defensible space and are defined as the following:

1. Zone 1 is the area nearest to the structures that requires maximum hazard reduction. This zone extends up to 30 feet outward from a structure where the most flammable vegetation would be removed including most trees. Remaining trees would be pruned to a height of 10 feet from the ground and be spaced at least 30 feet between crowns.
2. Zone 2 is a transitional area of fuels reduction between Zones 1 and 3. Typically this zone should extend at least 100 feet from structures. Stressed, diseased, dead or dying trees would be removed along with ladder fuels. Trees would be thinned to a crown spacing of at least 10 feet. Retained trees would be pruned to a height of 10 feet from the ground. Groups of trees may be left in areas however these groups would have at least 30 feet spacing between the crowns of the group and any surrounding trees.
3. Zone 3 is the area farthest from the structure. It extends from the edge of Zone 2 out to 300 feet. Thinning between tree crowns would occur to an average spacing of 10-25 feet. Ladder fuels would be removed from underneath retained trees.

Broadcast Burn (968 acres)

Broadcast burning would be implemented after the completion of mechanical/hand treatments that overlap the burn units. The location of the broadcast burn unit boundaries is based on control features surrounding the primary burn areas, including forest roads and Gross Reservoir. The burn would be broken up into several smaller burn blocks to reduce the number of acres burned at any one time to allow the area to recover. For safety and logistical purposes, an area surrounding the primary burn area would be established called a secondary burn area. This area would be located adjacent to the primary burn area, unless there is private property immediately adjacent, using predefined on the ground areas where fire could burn but is not targeted for burning. This area is where fire is allowed to spread without the aid of active ignition and provides a buffer between target and non-target areas. This is to alleviate having to call a fire outside the primary burn area an escaped fire where resources would be assigned to actively suppress the fire.

Other Components of the Proposed Action

The implementation of Forsythe II vegetation treatments would be done by contractors and/or by Forest Service employees. Either mechanized equipment or hand crews with chainsaws would be used to complete the treatments. Mechanized equipment operations are limited by the percent slope and amount of rock within a unit. Treatment units that are over 30% slope would be treated manually. However, there may be short distances within a unit where a machine could be working on slopes up to 40%. In some instances, a unit may be designated as a mechanical unit but there may be areas within the unit that are too steep or rocky for a machine to work. In those circumstances, these areas would be treated manually or left untreated to incorporate variable density within the area.

Slash created by these treatments may be removed offsite, piled and burned, chipped, and/or masticated. Where mechanized equipment is used, forest products would most likely be removed in the form of logs, chips or firewood. After work is completed, firewood may be removed from the hand treatment units. Temporary roads may be constructed to facilitate the vegetation management activities and would be obliterated after the completion of treatment activities. There would be no new permanent roads within the project area.

The environmental and social effects of this proposed action and any subsequent alternatives will be analyzed in an Environmental Assessment. Public comment and collaboration, as well as input from Forest Service resource specialists, will be used to further develop and refine the proposal.

Public Involvement

The Forest Service encourages your participation in the planning process for the Forsythe II project area. To facilitate this involvement, a public field trip is scheduled for **Saturday, September 26, 10 a.m. - 2 p.m. at Front Range Trailhead**. Field trip objectives are to provide information about proposed treatments and answer questions specific to this project proposal.

The Consolidated Appropriations Act of 2012 included a provision directing the Secretary of Agriculture to replace the existing appeal process with a pre-decisional objection process. Beginning March 27, 2013, this provision went into effect for the U.S. Forest Service for NEPA analysis when documented in either an Environmental Assessment or an Environmental Impact Statement. The Forest Service believes that considering public concerns before a decision is made aligns with our collaborative approach to forest management and increases the likelihood of resolving those concerns resulting in better, more informed decisions. In order to have standing to object to the project, you must submit a specific written comment during this public scoping and comment period. More information about the Objection Process can be found at <http://www.fs.fed.us/objections/>.

If you cannot attend either the public field trip but would like to remain informed or participate in the development of this proposed project, please send your comments to the attention of Cambria Armstrong at 2150 Centre Ave., Building E, Fort Collins, CO 80526, or email your comments to comments-rocky-mountain-arapaho-roosevelt-boulder@fs.fed.us. To be fully considered in the project analysis and keep the planning process on schedule, comments should be received prior to October 5, 2015. Cambria can also be reached at (970) 295-6768 should you have any questions about the project proposal or the objection process.